

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently Amended) A method for creating a snapshot of a virtual comprising:
~~identifying a source volume containing stored data, wherein the source volume is~~
comprising:
identifying a virtual volume comprising a plurality of objects defining a mapping to
data in at least one storage device wherein each one of the objects corresponds to a
different portion of the virtual volume, and wherein the objects are distributed across
more than one processor in a virtualization layer between at least one host and the at
least one storage device;
~~generating a snapshot of the source volume that is a point-in-time copy-~~
~~containing state information about a state of the source volume when the snapshot is-~~
~~generated~~ creating a set of partition snapshots for the plurality of objects, with one
partition snapshot for each of the objects, wherein each of the partition snapshots
comprises a point-in-time copy of the different portion of the virtual volume
corresponding to the one of the objects; and
~~distributing the snapshot of the source volume across the more than one-~~
~~processor in the virtualization layer~~
generating an overall snapshot of the virtual volume from the set of partition
snapshots.

2. (Currently Amended) The method of claim 1, ~~wherein the method of the~~
further comprising distributing the overall snapshot of the source virtual volume does not
affect the availability of the source volume to the at least one host across more than one
processor in the virtualization layer.

3. (Currently Amended) The method of claim 1, wherein the ~~generating~~
~~further includes:~~
each of the set of partition snapshots is created by for each processor that
contains objects in the virtual volume, creating an intermediate snapshot of a portion of
the virtual volume corresponding to objects contained on the processor to which the
corresponding object is distributed.

4. (Currently Amended) The method of claim ~~3~~1, wherein the ~~generating~~
~~further includes:~~
combining the intermediate snapshots from each processor to generate the
snapshot of the source volume each partition snapshot further comprises state
information related to the state of the different portion of the virtual volume
corresponding to the partition snapshot at the time the partition snapshot was created.

5. (Currently Amended) The method of claim 1, further comprising:
creating a change log corresponding to the overall snapshot; and
storing, in the change log, changes to the source-virtual volume made after the
overall snapshot is generated.

6. (Original) The method of claim 5, wherein the change log is a copy on write (COW) change log.

7. (Currently Amended) The method of claim 5, wherein the partition snapshot cannot be changed after it is generated.

8. (Currently Amended) A method for creating a snapshot of a virtual
~~comprising:-~~
~~identifying a source volume containing stored data, wherein the source volume is~~
comprising:
identifying a virtual volume comprising a plurality of objects defining a mapping to
data in at least one storage device wherein each one of the objects corresponds to a
different portion of the virtual volume, and wherein the objects are distributed across
more than one processor in a virtualization layer between at least one host and the at
least one storage device;
creating a set of partition snapshots for the plurality of objects, with one partition
snapshot for each of the objects, wherein each of the partition snapshots comprises a
point-in-time copy of the different portion of the virtual volume corresponding to the one
of the objects; and
specifying, for each of the partition snapshots, a change log volume
corresponding to the source-different portion of the virtual volume corresponding to the
object for the partition snapshot, for storing changes to the portion of the virtual volume;
~~generating a snapshot of the source volume that is a point-in-time copy-~~
~~containing state information about a state of the source volume when the snapshot is~~
~~generated-an overall snapshot of the virtual volume from the set of partition snapshots;~~
and
storing, in the each change log volume, changes made to the ~~source-~~
corresponding portion of the virtual volume after the overall snapshot is generated.

9. (Currently Amended) The method of claim 8, ~~further comprising:~~
~~distributing the snapshot of the source volume across the more than one~~
~~processor in the virtualization layer; and~~
~~distributing wherein the change log volume across is maintained by the more~~
~~than one processor in the virtualization layer to which the corresponding object is~~
distributed.

10. (Currently Amended) The method of claim 8, further comprising:
receiving a request for data stored in the source virtual volume;
determining, from the change log volume corresponding to the portion of the
virtual volume containing the requested data, whether the requested data has changed
since the overall snapshot was generated;
retrieving the requested data from the change log volume corresponding to
the portion of the virtual volume containing the requested data when it is determined
that the requested data has changed since the overall snapshot was generated; and
retrieving the requested data from the source volume corresponding to the
portion of the virtual volume containing the requested data, when it is determined that
the requested data has not changed since the overall snapshot was generated.

11. (Currently Amended) The method of claim 10, further comprising:
retrieving the requested data from the overall snapshot, when it is determined
that the requested data has not changed since the overall snapshot was generated.

12. (Currently Amended) The method of claim 8, ~~wherein the generating of the snapshot of the source volume does not affect the availability of the source~~ further comprising distributing the overall snapshot of the virtual volume to the at least one host across more than one processor in the virtualization layer.

13. (Currently Amended) The method of claim 8, wherein ~~the generating~~ further includes:-

~~for each processor that contains objects in the virtual volume, creating an intermediate snapshot of a portion of the virtual volume corresponding to objects contained on~~ each of the plurality of partition snapshots is created by the processor to which the corresponding object is distributed.

14. (Currently Amended) The method of claim 13, wherein ~~the generating~~ further includes:-

~~combining the intermediate~~ at least one partition snapshots from each processor to generate the further comprises state information related to the state of the different portion of the virtual volume corresponding to the partition snapshot of the source- volume at the time the at least one partition snapshot was created.

15. (Currently Amended) A system for creating a snapshot of a virtual volume comprising:

a plurality of storage devices storing data corresponding to a host;

a means for providing a virtualization layer between the host and the plurality of storage devices, the virtualization layer comprising a plurality of objects defining a mapping to data in the storage devices, wherein each one of the objects corresponds to a different portion of the virtual volume, and wherein the objects are distributed across more than one processor in the virtualization layer between the host and the plurality of storage devices; and

a means for providing a snapshot layer between the host and the virtualization layer, the snapshot layer comprising:

~~an intermediate-partition snapshot of object for each object in the virtualization layer, wherein the intermediate-partition snapshot for each object comprises a point-in-time copy of the different portion of the virtual volume corresponding to one of the plurality of objects in the virtualization layer, the partition snapshot having references to (1) the object one of the plurality of objects in the virtualization layer, (2) ~~an intermediate-a COW~~ point-in-time copy of the object-different portion of the virtual volume, and (3) a change log corresponding to the intermediate point-in-time copy-portion of the virtual volume,~~
and

an overall snapshot object ~~containing a reference of the virtual volume~~ comprising references to each intermediate-partition snapshot corresponding to objects comprising the virtual volume.

16. (Currently Amended) The system of claim 15, wherein each ~~intermediate-~~ point-in-time copy contains state information about a state of the corresponding object-
portion of the virtual volume in the virtualization layer when the snapshot layer is generated.

17. (Currently Amended) The system of claim 15, wherein each change log stores changes made to the corresponding ~~intermediate point-in-time copy~~ portion of the virtual volume after the snapshot layer is generated.

18. (Cancelled).

19. (Currently Amended) The system of claim 15, wherein ~~the virtualization layer has multiple processors and the intermediate~~ partition snapshot objects are distributed across the multiple processors in the virtualization layer.

20. (Original) The system of claim 15, further comprising:
an interface enabling the host to view a point-in-time representation of the data by accessing the overall snapshot object.

21. (Original) The system of claim 15, further comprising:
an interface enabling the host to specify when the snapshot layer is created.

22. (Original) The system of claim 15, wherein the snapshot layer is created on a periodic basis.

23. (Currently Amended) A system for creating a snapshot of a virtual volume comprising:

a means for identifying a source-volume containing stored data, wherein the source-volume is a virtual volume comprising a plurality of objects defining a mapping to data in at least one storage device wherein each one of the objects corresponds to a different portion of the virtual volume, and wherein the objects are distributed across more than one processor in a virtualization layer between at least one host and the at least one storage device;

a means for generating a creating a set of partition snapshots of the source-volume that is a point-in-time copy containing state information about a state of the source-volume when the snapshot is generated for the plurality of objects, with one partition snapshot for each of the objects, wherein each of the partition snapshots comprises a point-in-time copy of the different portion of the virtual volume corresponding to the one of the objects; and

a means for distributing-generating an overall the snapshot of the source-virtual volume across the more than one processor in the virtualization layer from the set of partition snapshots.

24. (Currently Amended) The system of claim 23, wherein the generating means further includes:

a means for creating an intermediate snapshot of a portion of the virtual volume corresponding to objects contained on each processor that contains objects distributing the overall snapshot across more than one processor in the virtual volume virtualization layer.

25. (Cancelled).

26. (Currently Amended) The system of claim ~~25~~23, further comprising:

a means for creating a change log corresponding to the overall snapshot; and

a means for storing, in the change log, changes to the ~~source~~virtual volume made after the snapshot is generated.

27. (Currently Amended) A tangibly-embodied computer-readable medium containing code for directing a processor to perform a method for creating a copy of stored data, the method comprising:

~~identifying a source-virtual volume containing stored data, wherein the source-volume is a virtual volume comprising a plurality of objects defining a mapping to data in at least one storage device wherein each one of the objects corresponds to a different portion of the virtual volume, and wherein the objects are distributed across more than one processor in a virtualization layer between at least one host and the at least one storage device;~~

~~generating a snapshot of the source volume that is a point-in-time copy containing state information about a state of the source volume when the snapshot is generated; and creating a set of partition snapshots for the plurality of objects, with one partition snapshot for each of the objects, wherein each of the partition snapshots comprises a point-in-time copy of the different portion of the virtual volume corresponding to the one of the objects; and~~

~~distributing the generating an overall snapshot of the source-virtual volume from the set of partition snapshots across the more than one processor in the virtualization layer.~~

28. (Currently Amended) The computer-readable medium of claim 27, wherein the ~~method further includes:-~~

~~for each processor that contains objects in the virtual volume, creating an intermediate snapshot of a~~ at least one partition snapshot further comprises state information related to the state of the different portion of the virtual volume corresponding to objects contained on the processor the partition snapshot at the time the partition snapshot was created.

29. (Currently Amended) The computer-readable medium of claim 27, wherein the method further includes:

~~combining the intermediate-distributing the overall snapshots across more than one processor in the virtualization layer from each processor to generate the snapshot of the source volume.~~

30. (Currently Amended) The computer-readable medium of claim 27, wherein the method further includes:

creating a change log corresponding to the overall snapshot; and
storing, in the change log, changes to the source-virtual volume made after the overall snapshot is generated.

31. (New) The method of claim 1, wherein the overall snapshot of the virtual volume comprises state information related to the state of the virtual volume at the time the snapshot was generated.

32. (New) The method of claim 1, further comprising:

creating a change log for each partition snapshot for storing changes to the different portion of the virtual volume corresponding to the object for the partition snapshot; and

storing, in the change log, changes to the portion of the virtual volume made after the partition snapshot is generated.